

High Consequence Areas and Integrity Management Plans

OPS Public Meeting
Communication Needs
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Denise Hamsher, Enbridge Energy Company

Short Presentation to Set Stage for Public Input

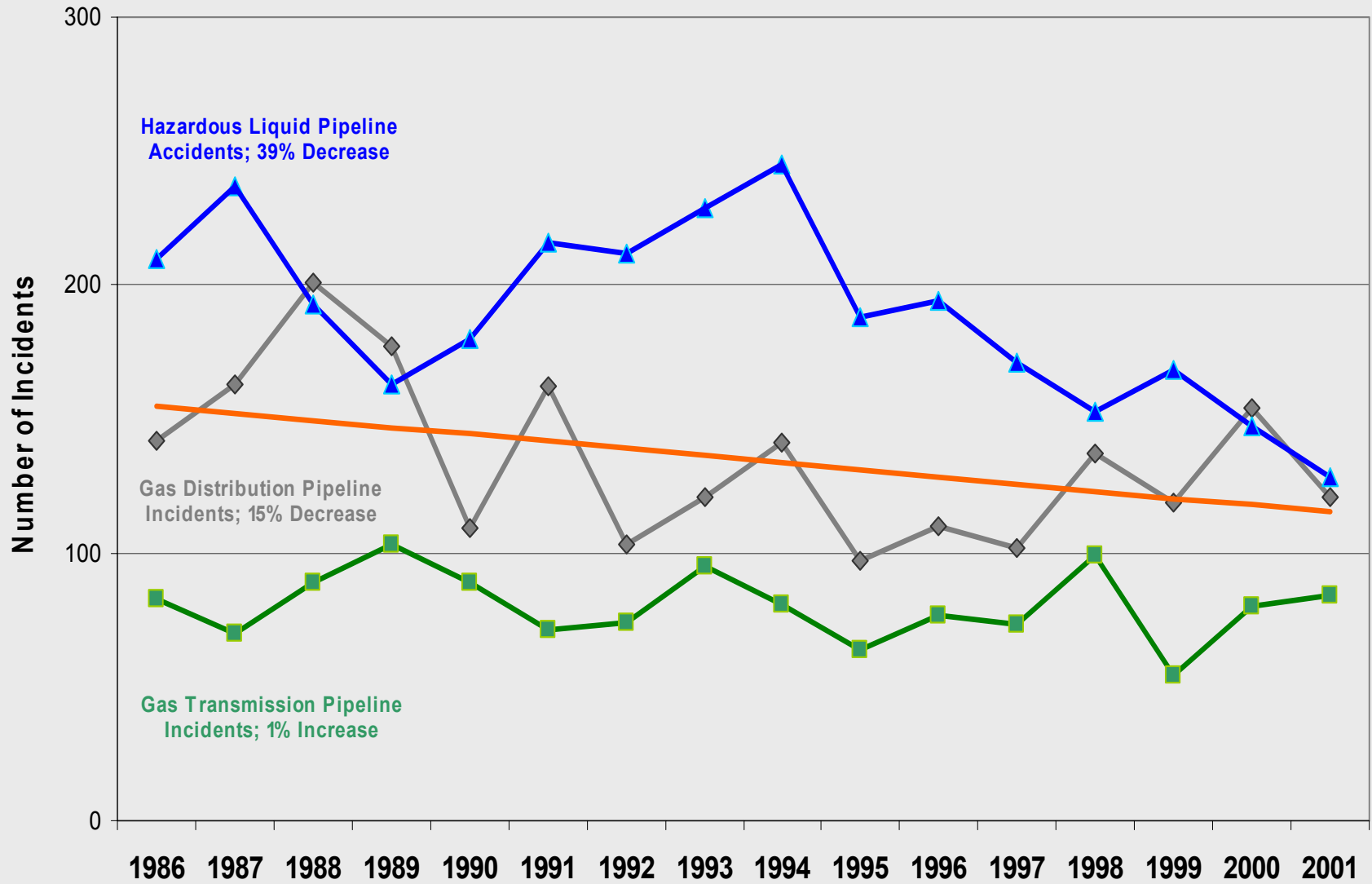
- What are high consequence areas?
- How are they identified?
- What is an “Integrity Management Plan” (IMP)?
- What are the key elements of the “IMP” plan?
- Is integrity testing the only means of managing risks?
- Is documentation subject to inspection?

Some components of overall pipeline safety program

- Construction & Design
- Hydrostatic and other testing before startup
- Corrosion prevention system and inspections
- Remote monitoring and control
- Monitoring/patrol of the pipeline route
- Preventative maintenance procedures
- Prescribed inspections
- Surveys of land and waterways
- Excavation damage prevention
- Emergency Planning
- Public awareness outreach

...each generating its own documents, manuals, diagrams, reports, etc.

Pipeline Incidents



All Pipeline Type Incidents; 23% Decrease

Identifying High Consequence Areas for Liquid Pipelines

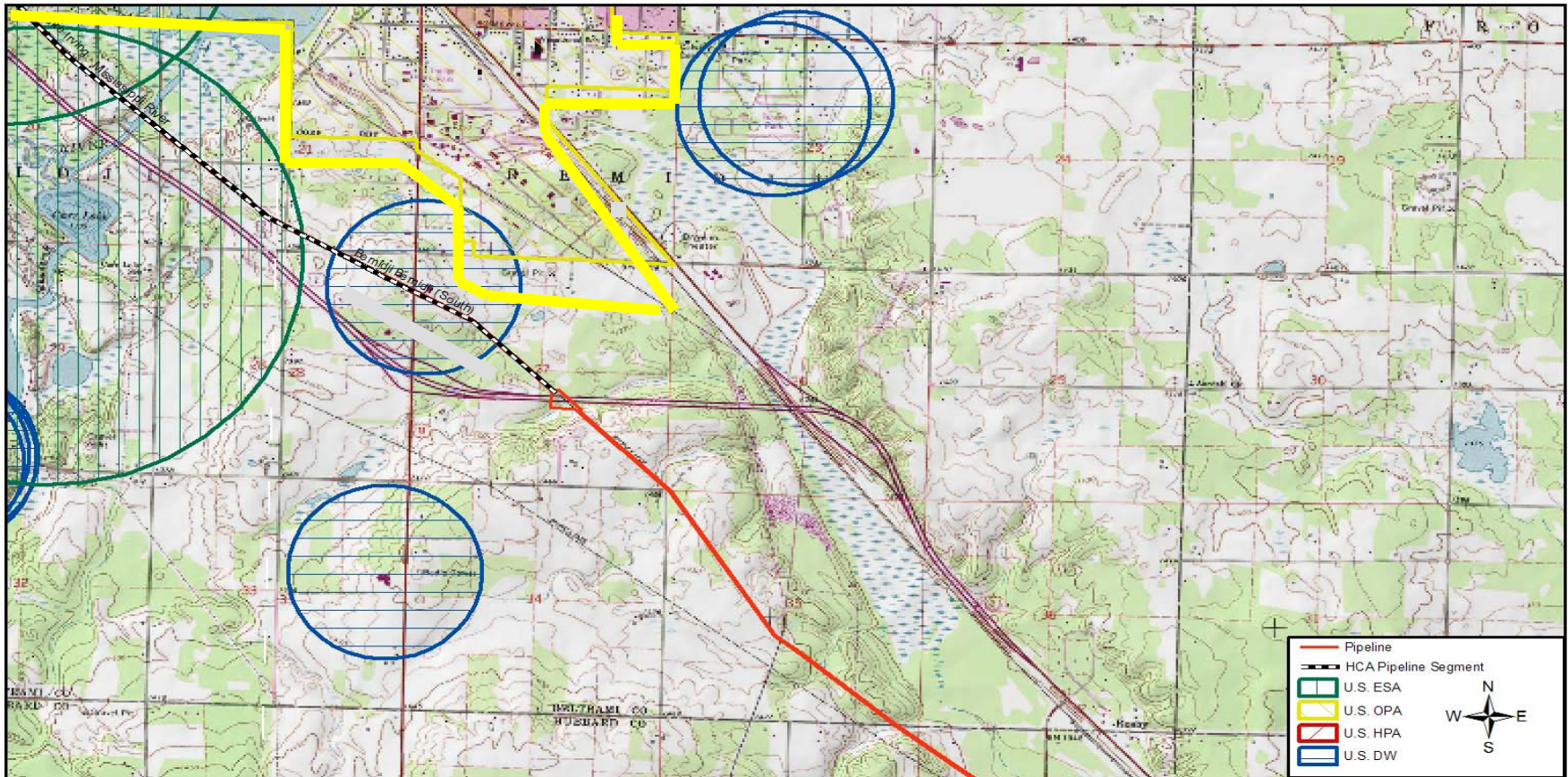
- Unusually environmentally sensitive areas:
 - Higher value public drinking water resources
 - Unusually sensitive ecological areas
 - Identified through local/state natural resource managers and mapped by OPS
- Commercially Navigable River Crossings
 - As defined by U.S. Army Corps of Engineers
- High Population Areas
 - Urban areas as defined by U.S. Census Bureau

HCA's for Natural Gas Transmission Pipelines

- Segments now classified in existing regulations as Class 3 and 4, **and**
- Segments within 300, 660 or 1000 feet (depending on pipe size and pressure) of:
 - Facilities housing mobility impaired, confined or hard to evacuate
 - Examples: hospitals, day care, prisons.....
 - Places where more than 20 gather at least 50 times per year
 - Examples: beaches, stadiums, religious facilities...
- Operator's responsibility to identify

HCA Example

Liquid Petroleum Pipeline



Enbridge Energy, Limited Partnership

Pipeline Segments Which May Impact High Consequence Areas

0 2,000 4,000 6,000 8,000 10,000 Feet

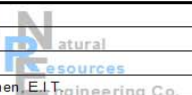
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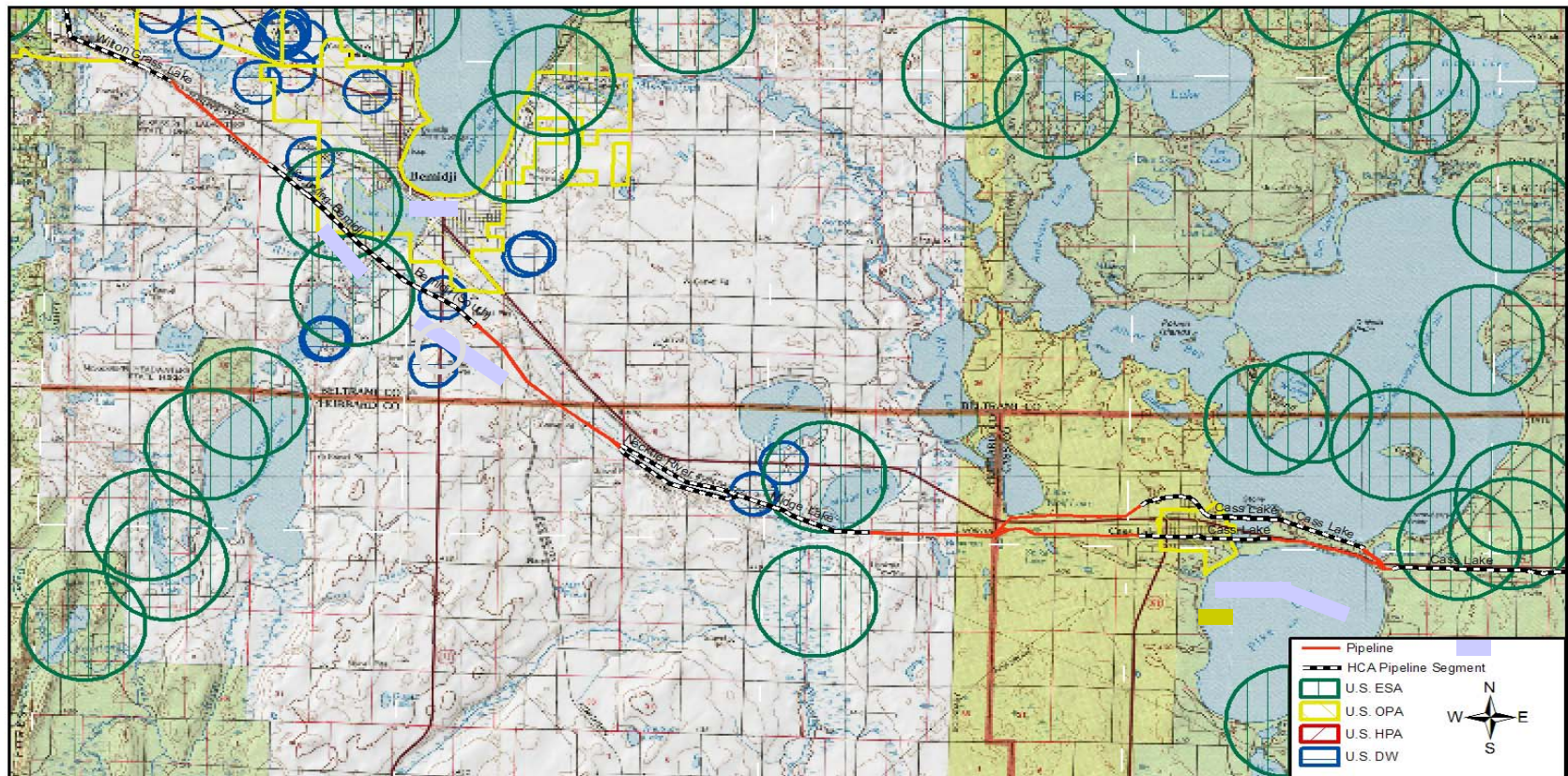
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SERIES: Lines 1,2,3,4&13



HCA example – Crude Oil and Natural Gas Liquid Pipeline



Enbridge Energy, Limited Partnership

Pipeline Segments Which May Impact High Consequence Areas

0 1 2 3 4 5 Miles

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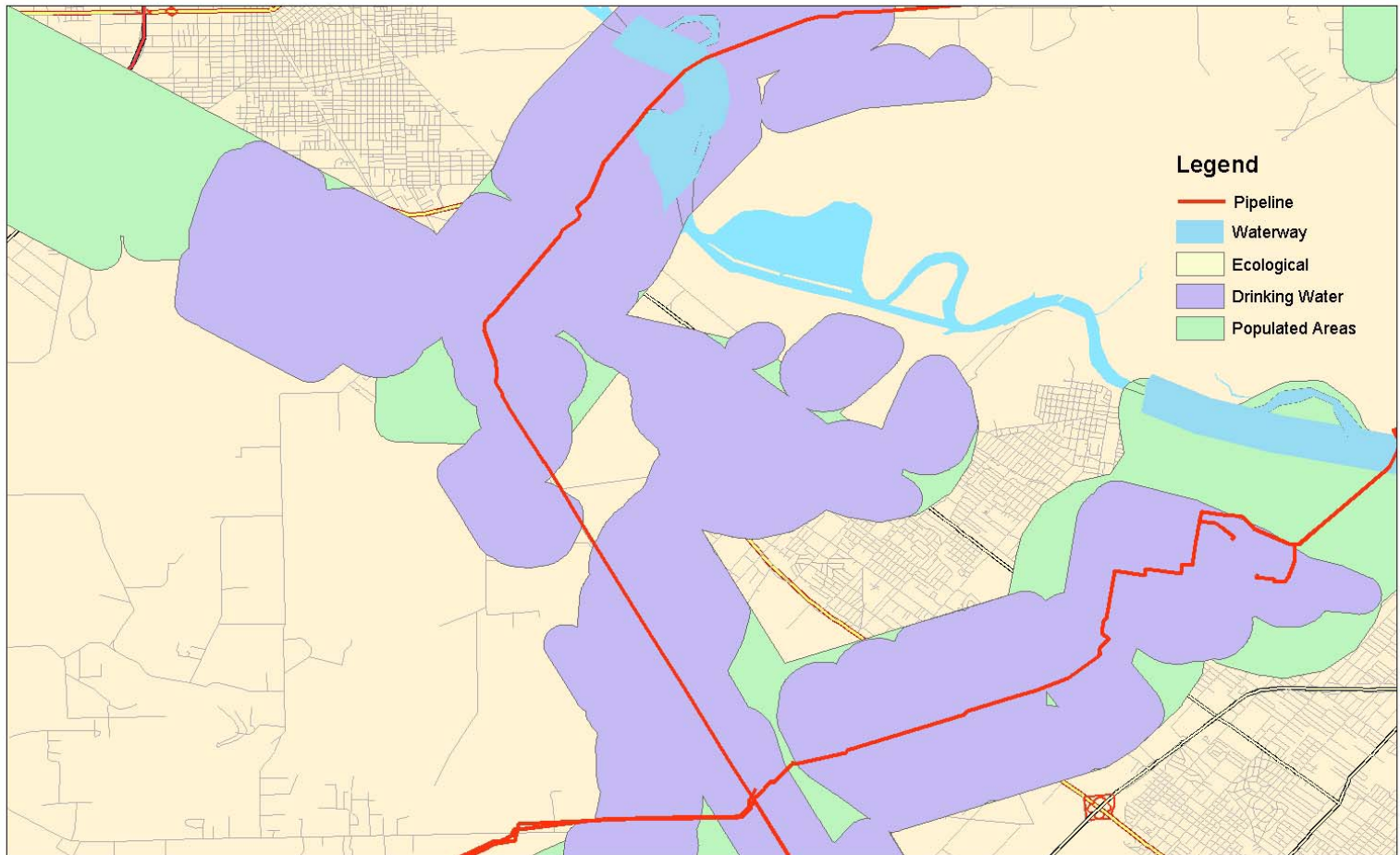
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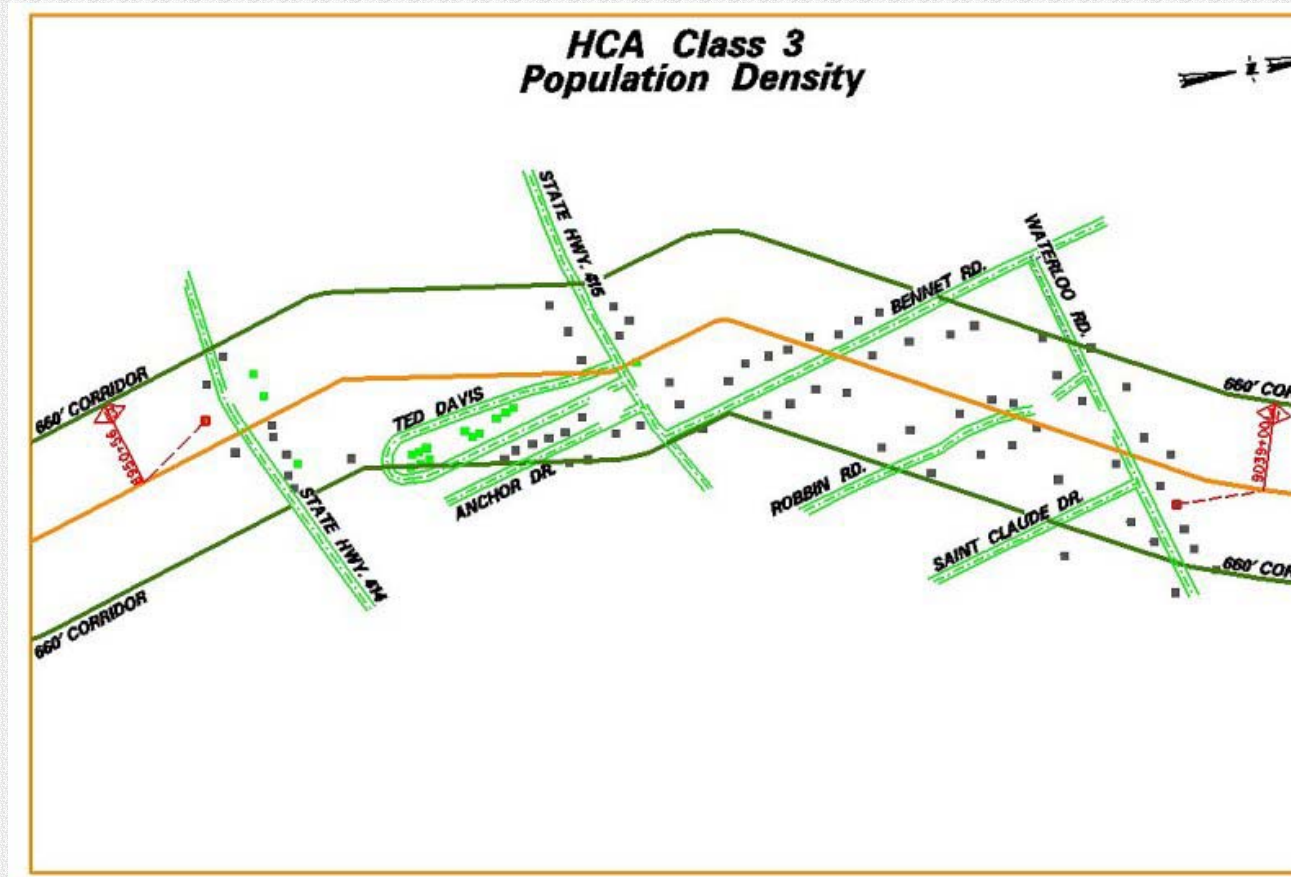
HCA example

Refined Products Pipeline



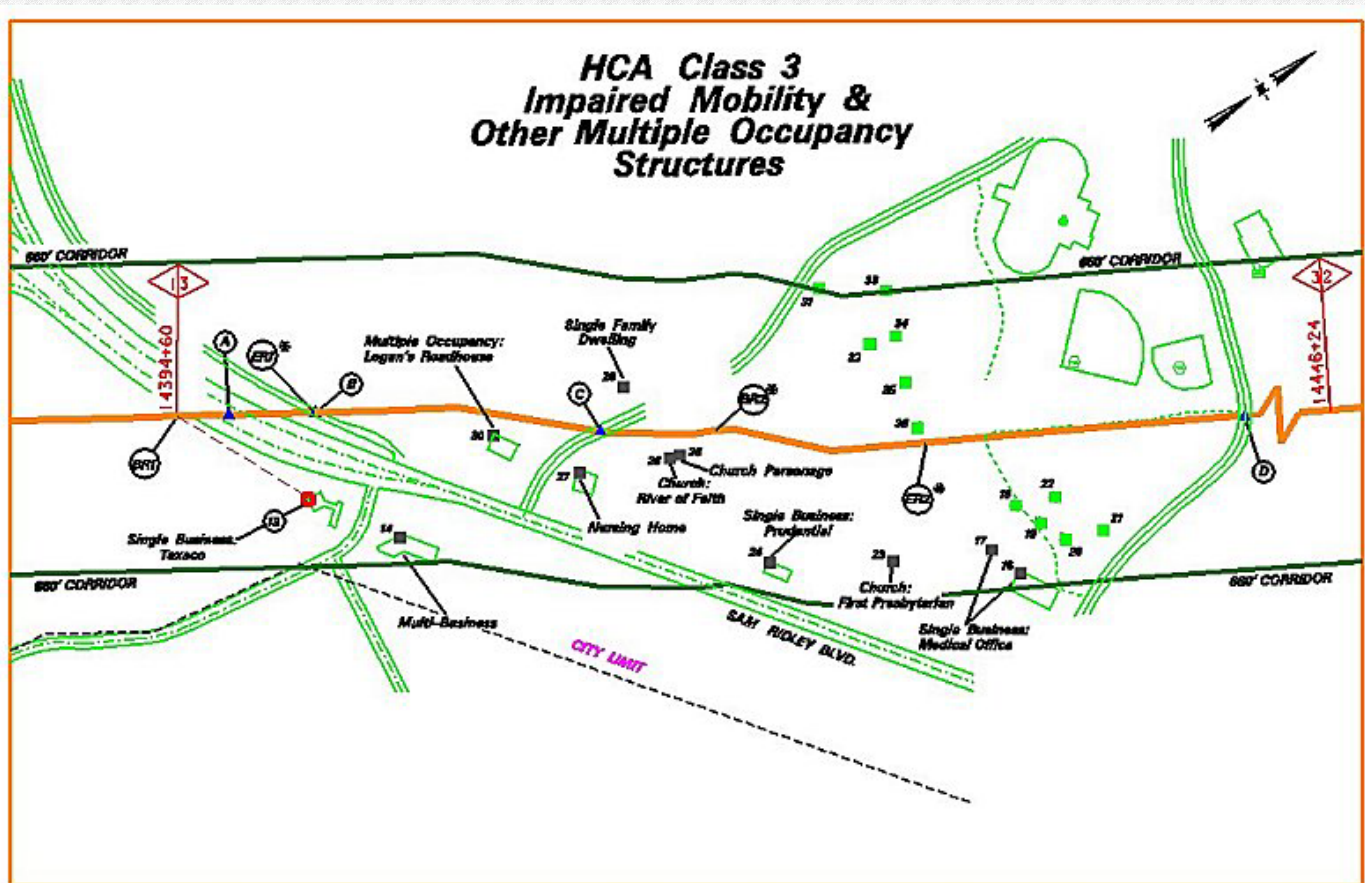
Background mapped stripped of detail normally available

Gas Pipeline HCA Example Higher Density Housing



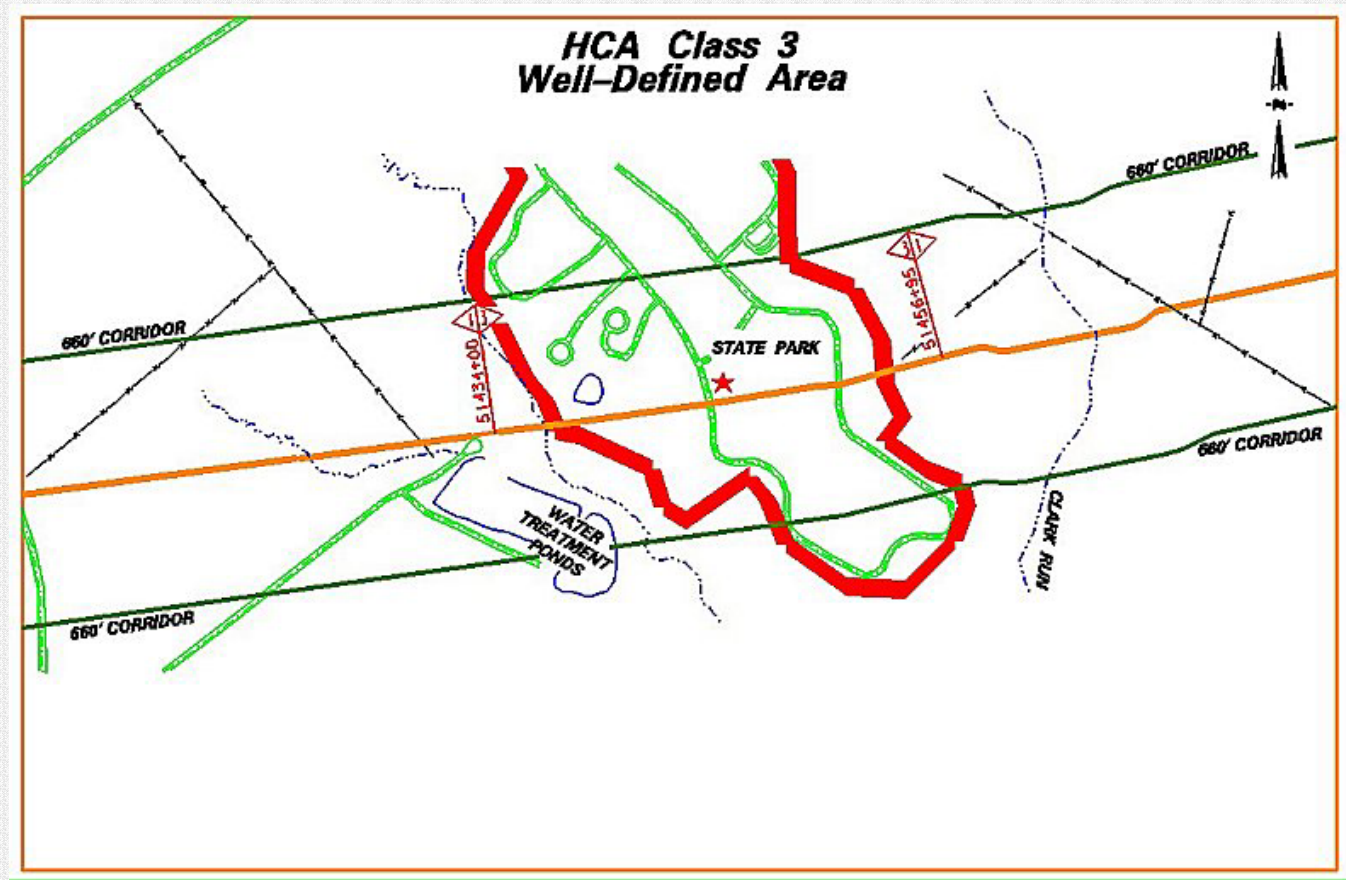
Gas Pipeline HCA Example

Limited Mobility Location



Gas Pipeline HCA Example

Well Defined Open Area



Process Steps for Integrity Management Plans

- Written Plan
- Identify high consequence areas
- Complete risk assessment to prioritize segments
- Develop baseline assessment plan
 - Prioritize segments
 - Schedule to meet regulatory deadlines
 - Select most appropriate assessment technique
 - Internal inspections, or Hydrostatic testing, or Alternative (e.g. Direct Assessment)
- Complete assessments

Process Steps (cont'd)

- Mitigate conditions and risks as necessary
 - Examples: repairs, reduction in pressures, supplemental damage prevention or other maintenance practices, reduce consequences, etc. and/or combination
- Develop periodic integrity testing and risk assessment schedules
- Assure documentation
- Participate in regulatory inspections of Integrity Management Program
- Evaluate program and manage change

Sample Outline of Integrity Management Plan

1. Introduction
2. High Consequence Areas Identification Process
3. Baseline Assessment Plan
4. Risk Based Assessment
 - Plan describes method of assessing probabilities and consequence
 - Documentation of results of risk assessments

Sample Plan Outline (cont'd)

5. Mitigation of Risks

- Pipeline Repair Criteria (following codes, standards and regulations)
- Actions to reduce probability and/or consequence

6. Integrity Management Plan Evaluation

7. Management of Change

- Operating, system or environmental changes

8. System maps (various types of print and electronic)

9. Quality Control Procedures

Types of Information in Integrity Management Plan Process

- System statistics
- Segment Identifications
- System maps (some of which in HCA)
- Written IMP plan
- Data source description
 - System, history, operating pressures, etc.
- Baseline testing plan
- Support for decisions, analysis and processes
- Document training in IMP
- Operating & Maintenance Procedures
- Direct Assessment Plan
- Risk prevention and mitigation measures
 - Repair schedule
 - Other actions taken
- Records of testing, maintenance, repairs inspections, patrols, etc.
- Evaluation of IMP Program
- Future IMP testing plans
- Documentation IMP provided to state agents

Inspections of IMP are Rigorous

- All major hazardous liquid operators were inspected in 2002 to ensure that HCAs have been properly identified nationwide
- Comprehensive audits have begun on Integrity Management programs
- OPS has developed in-depth protocols for those inspections
- Specific documentation requirements reviewed by OPS inspectors
- OPS inspectors access details of company program